

Appl. No. 10/262,470

Reply to Examiner's Action dated September 26, 2005

REMARKS/ARGUMENTS

The Applicants have carefully considered this application in connection with the Examiner's Action and respectfully request reconsideration of this application in view of the foregoing amendment and the following remarks.

The Applicants originally submitted Claims 1-16 in the application. The Applicants have amended Claim 1 and have canceled Claim 4. Accordingly, Claims 1-3 and 5-16 are currently pending in the application.

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I. Rejection of Claims 1, 3-7, 9-11 and 13-16 under 35 U.S.C. §103

The Examiner has rejected these claims under 35 U.S.C. §103(a) as unpatentable over Applicant's Admitted Prior Art (AAPA), as previously presented, in view of U.S. Patent No. 6,410,985 to Chan (Chan). As currently amended, the claims are not obvious in view of the combination. The Examiner asserts that the recited range in the currently pending claims is obvious because one who is skilled in the art would know to determine the ratio as an optimum value. In support of this, the Examiner cites *In re Boesch*, 617 F.2d 272 (CCPA 1980).

It is respectfully submitted that the Examiner's reliance on *In re Boesch*, in the present case is misplaced, because not only are there not any ranges recited in the combination as to thickness ratios between X_1 and X_2 , as was the case in *In re Boesch*, but the recited ratio is not even recognized to be a result-effective variable in the combination. In *In re Antonie*, 559 F.2d 618, 620 (CCPA 1977), the Court found that the Examiner was in error when he found that the teachings of a reference that stated no optimized ratios whatsoever would render a device having those optimized ratios obvious. The Court stated the Examiner's ruling was error because the reference contained no teaching of any ratios and did not recognize the problem being addressed by the application. This is the case here.

The present application is concerned with reducing the shorts between adjacent interconnects that can result from metal migrating through low-k materials by making certain that only a certain amount of metal, expressed as ratios, is deposited on the sidewalls of the interconnect structure. This problem and solution are not addressed in the asserted combination.

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Chan is concerned with filling smaller "V" or "U" shaped trenches with highly conductive metals, such as silver or copper, to thereby achieve a greater interconnect density in a given area. (Col. 2, lines 51-67 and Col. 3, lines 1-10). There is no discussion that Applicants have found that discusses the problem and solution addressed by the present invention. However, the Applicants invite the Examiner to point out such a teaching in the event that the Applicants have inadvertently overlooked it.

At best, Chan only teaches that due to the difficulty of achieving a build-up of metal on the sidewalls of the narrow trench, one should deposit approximately 300 angstroms of metal. (Col. 5, lines 63-67), and as admitted by the Examiner the AAPA does not teach or suggest how to alleviate the problem addressed by the present invention. Further, there is no suggestion whatsoever of the recited ratios in the combination, and they should not be expected to be taught by the combination because it does not even recognize the problems addressed by the present application. Thus, given the combination's failure to recognize the problem and solution and provide, even in a general way, thickness ratios that would address that problem, one skilled in the art would not be motivated to optimize the thickness ratios recited in Claims 1, 7, 11, and 15 based on the combined teachings of Chan and the AAPA.

Accordingly, the asserted combination fails to establish a *prima facie* case of obviousness with respect to independent claims 1, 7, 11 and 15 and their respective dependent claims.

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In view of the foregoing remarks, the cited references do not support the Examiner's rejection of Claims 1-3 and 5-16 under 35 U.S.C. §103(a). The Applicants therefore respectfully request the Examiner withdraw the rejection.

II. Conclusion

In view of the foregoing amendment and remarks, the Applicants now see all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicit a Notice of Allowance for Claims 1-3 and 5-16.

The Applicants request the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application. The Commissioner is hereby authorized to charge any fees, credits or overpayments to Deposit Account 20-0668.

Respectfully submitted,

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